## Project Introduction

This SBIR project proposes to develop a computational tool for helicopter rotor noise prediction based on hybrid Cartesian grid/gridless approach. The uniqueness of this approach is to achieve fully automated grid generation without grid overlapping. As a result, the resulting software will enjoy great ease of use with minimum human interference. There is no grid distortion in the majority of the computational domain. One can apply the best available flow solver which may not be possible to use in the unstructured grid approach. All are important for achieving accurate prediction of helicopter rotor aerodynamics and near-field acoustics. In Phase I, the high-speed impulsive noise will be first investigated and in Phase II, the blade-vortex interaction noise will be further explored.

## Primary U.S. Work Locations and Key Partners



| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| D&P, LLC | Lead Organization | Industry | Phoenix, Arizona |
| 🟢Langley Research Center(LaRC) | Supporting Organization | NASA Center | Hampton, Virginia |

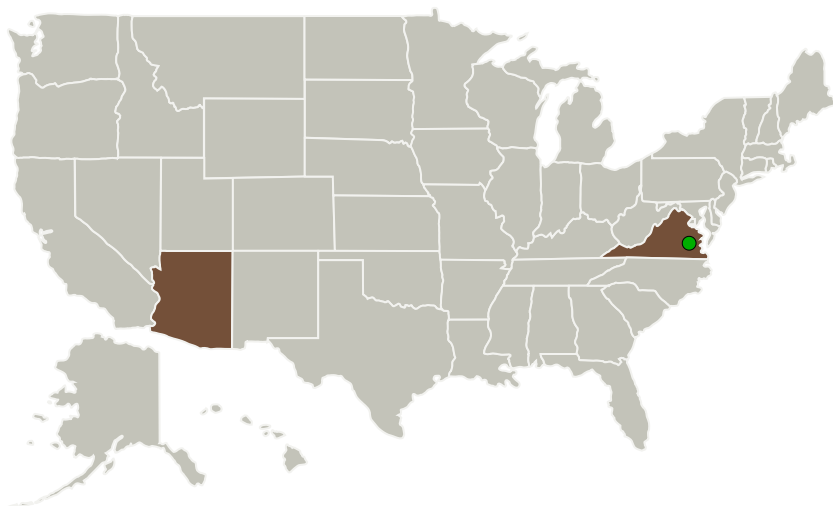

A Computational Tool for Helicopter Rotor Noise Prediction, Phase I

## Table of Contents

TechPort

Printed on 12/06/2022
08:05 PM UTC

For more information and an accessible alternative, please visit:
https://techport.nasa.gov/view/9293

Page 1

| Primary U.S. Work Locations | |
|---|---|
| Arizona | Virginia |

## Project Transitions

▶ **February 2011:** Project Start

✔ **September 2011:** Closed out

**Closeout Documentation:**
- Final Summary Chart*(https://techport.nasa.gov/file/137811)*

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

D&P, LLC

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**
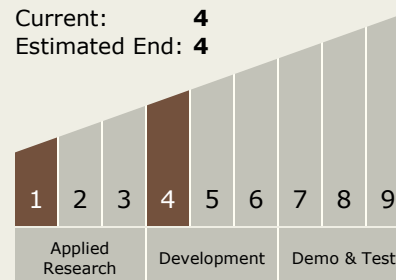
Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Lei Tang

## Technology Maturity (TRL)

Start: **1**
Current: **4**
Estimated End: **4**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Applied Research | | | Development | | | Demo & Test | | |

## Technology Areas

**Primary:**

- TX15 Flight Vehicle Systems
  └ TX15.1 Aerosciences
    └ TX15.1.4 Aeroacoustics

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System